

## PATENT SPECIFICATION

493,451

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Complete Specification Accepted: Oct. 7, 1938.



## COMPLETE SPECIFICATION

## Improved Means for Connecting Tubular Conduits

We, CLAYTON DEWANDRE COMPANY LIMITED, a British Company, WILLIAM MILLER CALLA, and SYDNEY EDGAR WILLETT, both British Subjects, all of 5 Titanic Works, Lincoln, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following 10 statement:—

This invention relates to a rotatable pipe joint and the object of the invention is to provide an improved joint of this character suitable for the transmission 15 of oil under pressure from a pump to the interior of an oscillating cylinder and for similar purposes.

It has been proposed heretofore to utilise a form of cup washer for sealing 20 the joint between relatively rotatable pipe joint or conduit members one of which projects into the other.

The present invention consists in an improved construction or arrangement 25 comprising a cylindrical housing, a piston mounted to rotate within the housing and carrying a tubular connector which projects through one end of the housing and which provides a passage 30 passing through the piston, a cup washer arranged to make a fluid-tight joint between the piston and the housing and a spring tending to move the tubular connector axially relatively to the housing 35 and thereby to keep the piston seated against the internal surface of the end wall of the housing adjacent the opening through which the tubular connector projects.

According to a preferred form of the invention the end wall of the housing is recessed externally to receive a packing 40 ring which is held in position by means of a disc screwed to the housing, the aforesaid spring being located between 45 the said disc and a nut or collar mounted on the tubular connector.

According to a preferred form of the invention also the end of the housing 50 remote from that through which the aforesaid tubular connector projects is closed by a member to which is fixed a pipe extending at right angles to the

axis of the cylindrical housing and adjustable in position round the axis of 55 the housing.

The invention will be more readily understood from the following description with reference to the accompanying 60 drawing in which the only figure is a sectional elevation showing the preferred form of connection between an inlet conduit and an oscillating cylinder.

In the construction illustrated *a* indicates an oscillating cylinder mounted 65 for movement around the axis of trunnions *b* one of which also serves as an oil inlet, being formed with an internal passage *c* communicating through a pipe *d* with an inlet *e* in the base of the 70 cylinder.

Oil is supplied under pressure through an inlet pipe *f* the end of which is fixed to a member *g* which closes one end of a 75 cylindrical housing *h* through the opposite end of which extends a tubular connector *i* which is screw-threaded into the passage *c* of the trunnion *b*. The oil passage between the pipe *f* and the pipe *d* is constituted by a passage *j* formed in a screw-threaded plug *k* which closes the outer 80 end of the member *g* a passage *l* formed through the member *g* and a passage *m* formed through the tubular connector *i*.

The end of the connector *i* within the 85 cylindrical chamber *h* is formed with a piston *n* which supports a cup washer *o* held in position on the inner end of the connector *i* by a nut *x*. The outer end of the chamber *h* is recessed to receive a 90 packing ring *p* which is held in position by a disc *q* and spring *r* whose outer end bears against a nut *s* mounted on the connector *i*. The spring *r* tends to move the 95 tubular conduit *i* axially relatively to the cylindrical housing *h* and thus to keep the piston *n* seated against the surface of the end wall of the housing.

The inlet pipe *f* is adjustable in position around the axis of the member *g* and 100 chamber *h* by slackening the plug *k*, changing the position of a member *t* into which the pipe *f* is socketted and again screwing up the plug *k* by means of a nut 105 *u* on its outer end. The inner portion of the plug *k* has a perforation *v* which

allows the oil to enter the passage *j* in all relative positions of the members *k* and *t*. The parts shown at *u* in the drawing are packing rings which seal the joints between the parts *u* and *t* and *t* and *g*.

In operation the oil under pressure in the chamber formed by the members *g* and *h* causes the cup washer *o* to bear tightly against the walls of the chamber *h* and thus prevent leakage of oil into the atmosphere. Angular displacement of the cylinder *a* is transmitted to its trunnion *b* and also to the connector *i* to which the trunnion is fixed. This angular displacement, however, can take place freely within the housing *h* with the walls of which the cup washer *o* makes continuous contact thus preventing leakage during the angular displacements of the cylinder.

It is to be understood that although the invention has been described with particular reference to the supply of oil to an oscillating cylinder its application is not limited in this respect as it can be applied in a variety of cases where transmission of fluid has to take place from a fixed conduit to a rotatably displaceable conduit.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A rotatable pipe joint comprising a cylindrical housing, a piston mounted to rotate within said housing and fixed to a tubular conduit which projects through an opening in the end wall of said housing and which provides a passage passing through the piston, a cup washer arranged to make a fluid-tight joint between the piston and the housing and a spring tending to move the tubular connector axially relatively to the housing and thereby to keep the piston seated against the internal surface of the end wall of the housing adjacent the opening through which the tubular connector projects.

2. A rotatable pipe joint as claimed in

Claim 1 wherein the end wall of the housing is recessed externally to receive a packing ring which is held in position by means of a disc screwed to the housing, the aforesaid spring being located between the said disc and a nut or collar mounted on the tubular connector.

3. A rotatable pipe joint as claimed in Claim 1 or 2 wherein the end of the housing remote from that through which the aforesaid tubular connector projects is closed by a member to which is fixed a pipe extending at right angles to the axis of the cylindrical housing and adjustable in position round the axis of the housing.

4. A rotatable pipe joint as claimed in any of the preceding claims wherein the projecting end of said tubular connector is fixedly connected with the hollow trunnion of an oscillating cylinder.

5. A pipe joint according to Claim 4 wherein the interior of the said hollow trunnion has a tubular connection leading therefrom to one end of the cylinder.

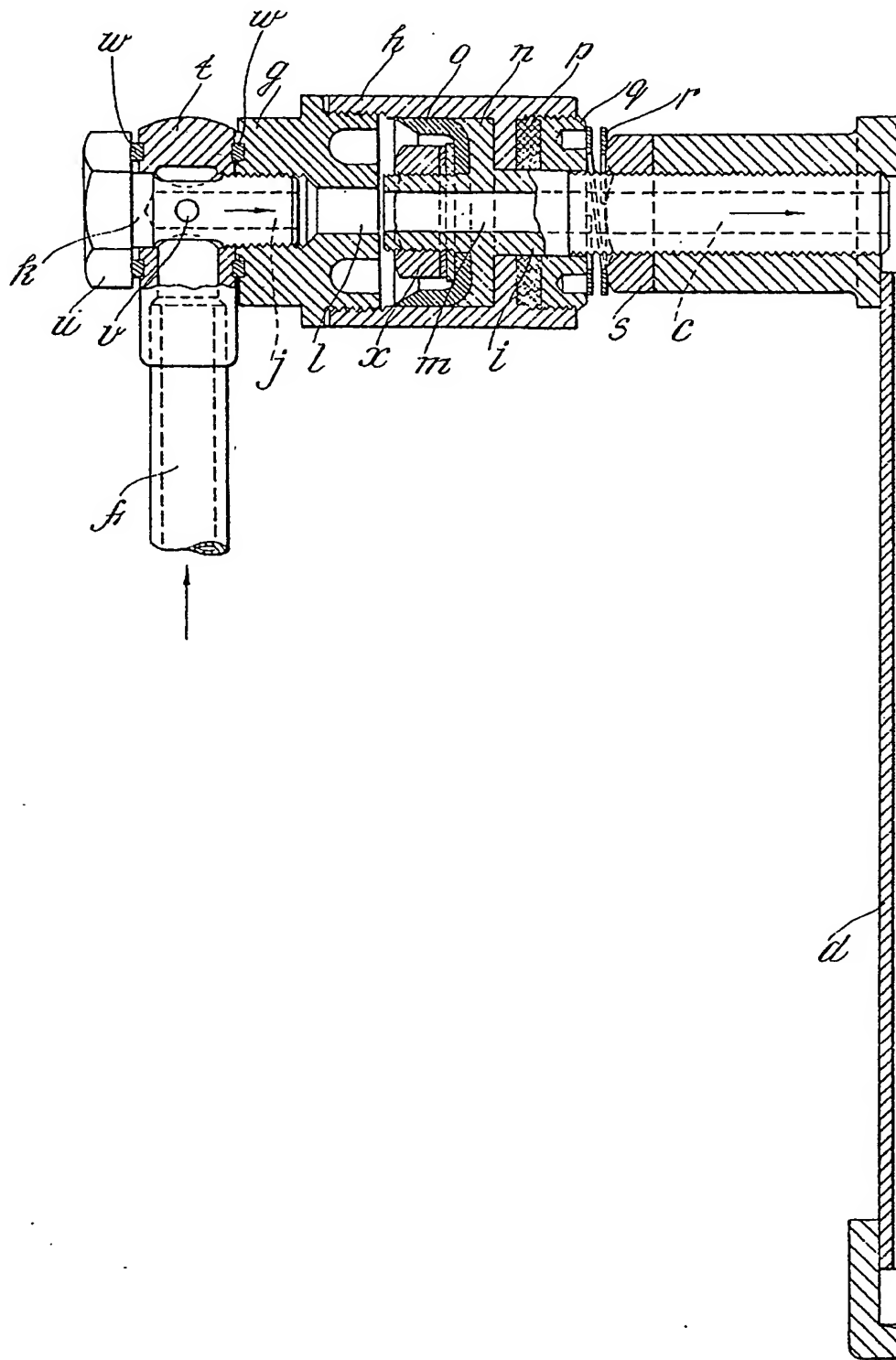
6. A rotatable pipe joint arranged to connect a fixed conduit to an oscillating cylinder comprising a cylindrical chamber, an inlet conduit fixed to an axial inlet at one end of said chamber, an axial outlet at the opposite end of said chamber, a piston mounted to rotate in said chamber and formed with a tubular connector projecting through said axial outlet and fixed to a hollow trunnion of the cylinder, a cup washer mounted on said piston within the chamber and a spring tending to move said tubular connector axially relatively to said chamber and thereby to keep said piston seated against the internal surface of the end wall of said chamber adjacent said outlet.

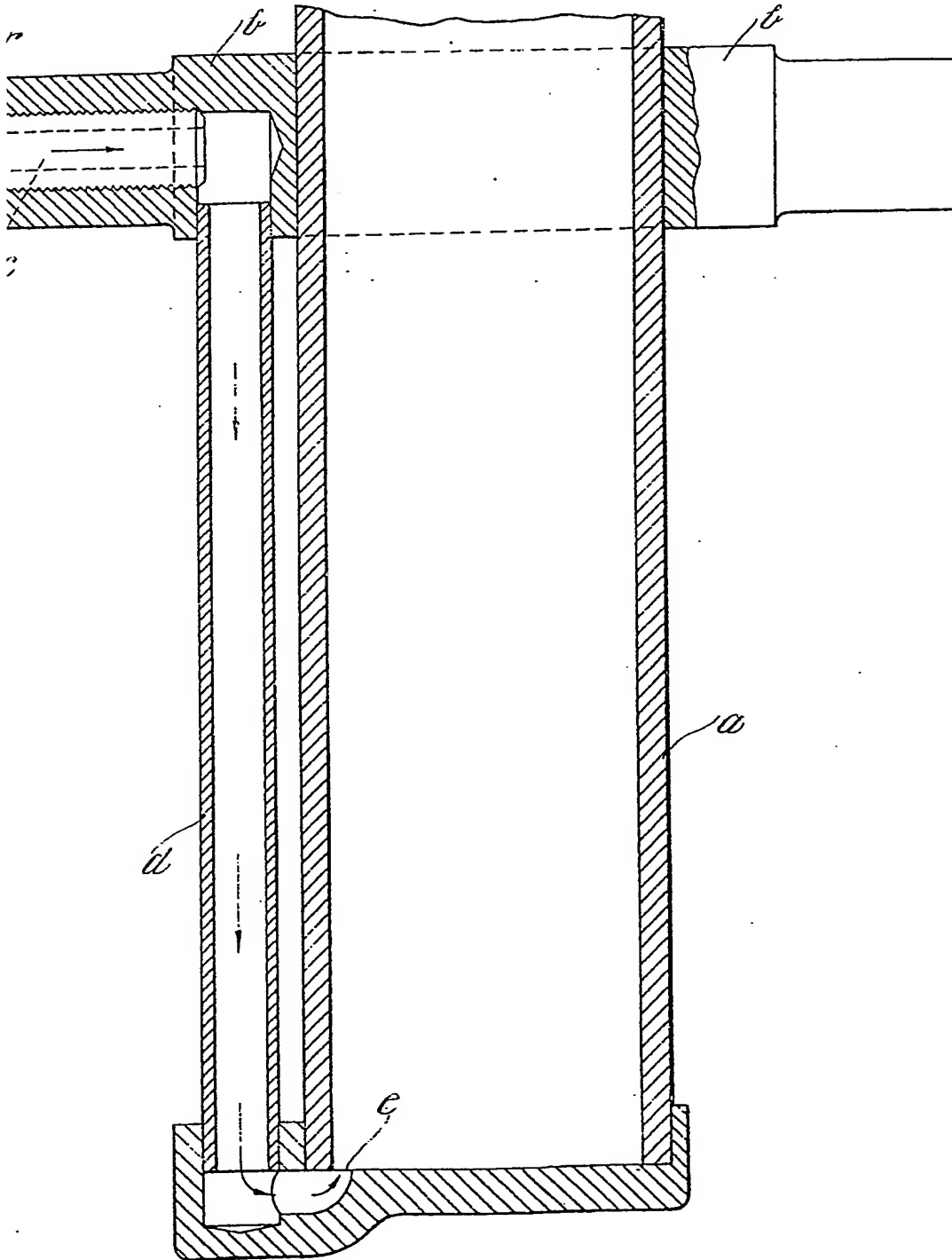
7. A rotatable pipe joint substantially as herein described and as shown in the accompanying drawing.

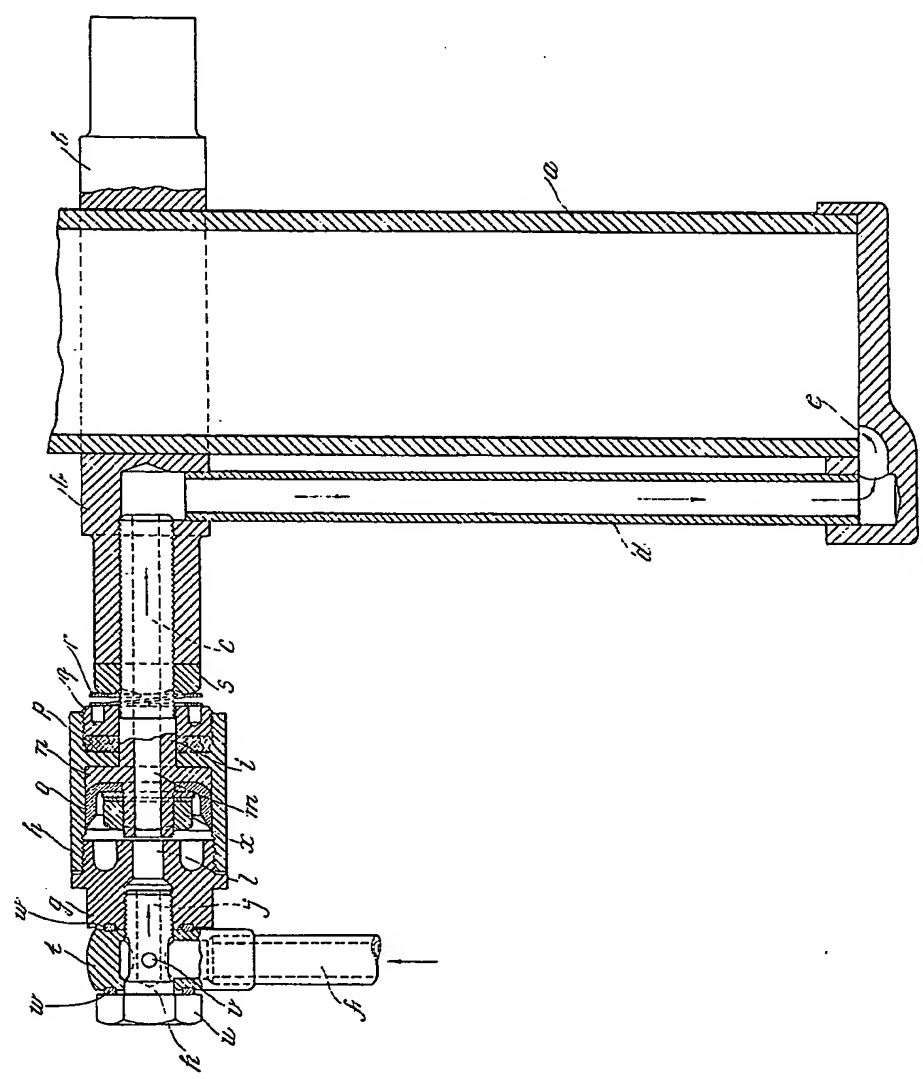
Dated this 7th day of April, 1937.

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*[This Drawing is a reproduction of the Original on a reduced scale.]*







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